

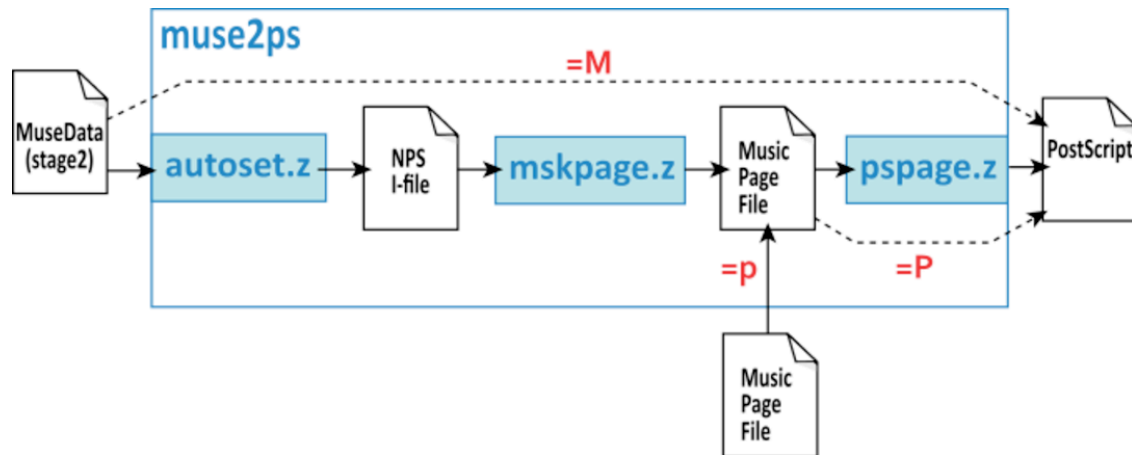
Applications of MuseData

Craig Stuart Sapp
craig @ ccrma.stanford.edu
23 February 2017
Music 253
Stanford University

muse2ps

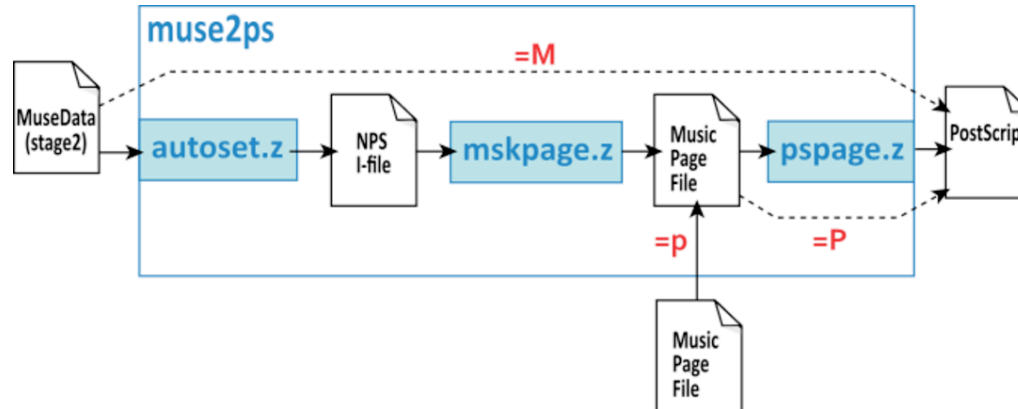
Command-line interface to the MuseData printing system

Converts MuseData data into Graphical Music as PostScript files.



- Source code (pre-compiled Zbex code with C-language wrapper):
<https://github.com/musedata/muse2ps>
- Documentation
<http://muse2ps.ccarh.org>

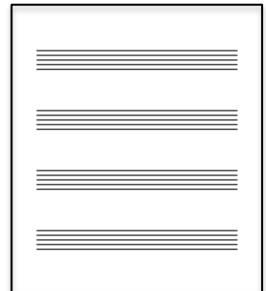
muse2ps sub-programs



- **autoset.z** Typeset music onto a single infinitely long musical system

- **mskpage.z** Split infinite system into partial systems and pages:

- **pspage.z** Convert page-layout files into PostScript files



These are separate programs in dmuse IDE, but bundled for use in muse2ps

- **.Z** == Zbex language file, see: http://wiki.ccarh.org/wiki/Zbex_programming_language

muse2ps options

<http://wiki.ccarh.org/wiki/Muse2ps#Options>

muse2ps option index

- | | | |
|---------------------------------|--------------------------------|----------------------------------|
| • =c compression | • =l indentation amount | • =t top margin |
| • =C composer | • =j justification | • =T title |
| • =d diagnostics | • =k display options | • =u subtitle |
| • =D dash spacing | • =l page length | • =v staff spacing |
| • =E eof insertion | • =m left margin | • =w system width |
| • =f fill by staff | • =M embed stage2 data | • =W thin barlines |
| • =F fill by system | • =n number of systems | • =x no suggestions |
| • =g grand staff spacing | • =p page files input | • =X no last barline |
| • =G group selection | • =P embed page files | • =y no line controls |
| • =h note space | • =Q min. dist. dur. | • =Y no initial time sig. |
| • =i indentation flag | • =s system spine | • =z music size |
| | • =S title/system space | |

Command-line options

```
cat file.md2 | muse2ps =z12c120j | ps2pdf -sPAPERSIZE=letter - - > output.pdf
```

Embedded options in file header:

```
@muse2psv1==z12c120j
```

MuseData on Github

<https://github.com/musedata>

Corelli:

<https://github.com/musedata/corelli>

<http://corelli.ccarh.org>

Concerto in G Minor, Op. 6, No. 8 for Strings and Basso continuo

Fatto per la notte di natale

I.

Vivace **Grave** *Arcate sostenute e come sta*

The musical score is for Corelli's Concerto in G Minor, Op. 6, No. 8, for Strings and Basso continuo. It is in G minor, 3/4 time, and consists of two parts: a Vivace section and a Grave section. The instruments are Violino 1 concertino, Violino 2 concertino, Violoncello concertino, Violino 1 concerto grosso, Violino 2 concerto grosso, Viola, and Basso concerto grosso. The score includes fingerings and bowings for the strings.

Violino 1 concertino
Violino 2 concertino
Violoncello concertino
Violino 1 concerto grosso
Violino 2 concerto grosso
Viola
Basso concerto grosso

Beethoven Symphonies, Quartets

<http://beethoven.ccarh.org>

Symphony No. 5

I
Allegro con brio. (♩ = 108)

Flauti 1, 2

Oboi 1, 2

Clarineti 1, 2
in B \flat

Fagotti 1, 2

Corni 1, 2
in E \flat

Trombe 1, 2
in C

Timpani
in C, G

Violino I

Violino II

Viola

Violoncello

Contrabasso

This image shows the first movement of Beethoven's Symphony No. 5, 'Allegro con brio'. The score is for a full orchestra and includes parts for Flutes 1 & 2, Oboes 1 & 2, Clarinets 1 & 2 in B-flat, Bassoons 1 & 2, Horns 1 & 2 in E-flat, Trumpets 1 & 2 in C, Timpani in C and G, Violins I & II, Viola, Violoncello, and Contrabasso. The key signature is one flat (B-flat major/D minor) and the time signature is 4/4. The tempo is marked 'Allegro con brio' with a quarter note equal to 108 beats per minute. The score begins with a 'zu 2' marking and a 'ff' dynamic. The first movement is marked 'I'.

String Quartet in C Minor, Op. 18, No. 4

Allegro ma non tanto

Violin 1

Violin 2

Viola


Violoncello

This image shows the first movement of Beethoven's String Quartet in C Minor, Op. 18, No. 4, 'Allegro ma non tanto'. The score is for a string quartet and includes parts for Violin 1, Violin 2, Viola, and Violoncello. The key signature is three flats (C minor) and the time signature is 4/4. The tempo is marked 'Allegro ma non tanto'. The score begins with a 'p' dynamic. The first movement is marked 'I'. The score includes markings for 'cresc.' and 'ff'.

Josquin Research Project


<http://josquin.stanford.edu>

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The Josquin Research Project


Search, browse, and analyze complete scores of polyphonic music, ca. 1420–ca. 1520



QUICK BROWSE

Browse

[Josquin Research Project - josquin.stanford.edu](#)
Like Page



Josquin Research Project - josquin.stanford.edu

March 8, 2016

The JRP is updating and expanding our "piano roll" tool. Here's an example (click "?" for a key): <http://josquin.stanford.edu/proll/?id=Ano3001>

JRP Piano Roll

JOSQUIN.STANFORD...

5 Comment 1

Sample Work: [Ockeghem, La despourveue](#)


La despourveue

Form: rondeau Johannes Ockeghem

Discantus

Tenor

Contra



RECENTLY ADDED

Click the title of any piece for work-specific search and analysis tools.

Composer	Title	Scores	MP3
Anonymous	Sil vous plaist bien que je vous tiegne		
Busnoys	Sil vous plaist bien que je vous tiegne		
Daser	Missa Preter rerum		
Josquin	Missa De beata virgine		
La Rue	Missa De beata virgine		
Compere	Alons fere nos barbes		
Du Fay	Craindre vous vueil douce dame de pris		



Josquin des Prez (c.1450-1521)

Dynamic notation generation for searching

SEARCH ?

Search Results for Pitch: "cdefg"

3185 matches in 425 works/742 movements < 1 ... 93 > view all

Match Locations	JRPID	Title	Voices	Scores	MP3
		Missa [Bergerette savoysienne]	4		
5	Ano1001a	Kyrie (Jena 32)	4		
6	Ano1001b	Gloria (Jena 32)	4		
11	Ano1001c	Credo (Jena 32)	4		
6	Ano1001d	Sanctus (Jena 32)	4		
2	Ano1001e	Agnus Dei (Jena 32)	4		
8	Ano1002	Sanctus Super iste puer magnus (Munich 3154)	4		
2	Ano3001	Fama malum (Brussels 228)	4		
8	Ano3002	Tambur tambur (Cortona/Paris)	4		

24

A musical score with four staves. A blue arrow points to a specific note in the first staff, which is a quarter note G4. The score is in 4/4 time and features various musical notations including rests, quarter notes, and half notes.

JRP work pages

The screenshot shows the JRP (Johannes Renaissance Project) work page for 'Non per la (Martini)'. The page is divided into two main sections: 'SEARCH' and 'ANALYSIS TOOLS'. The 'SEARCH' section includes a search bar, a 'Choose Repertory' dropdown, and a 'Search' button. The 'ANALYSIS TOOLS' section includes a 'Choose Repertory' dropdown and a list of analysis tools: 'RIBBON formal analysis', 'Activity attacks per measure', 'DISSONANT all dissonances marked', 'SUSPENSION all suspensions marked', 'PARALLEL parallel perfect intervals', and 'Piano Roll'. The main content area displays the title 'Martini, Non per la (Mar3021)', a 'Score' button, and a 'Score w/ ed MP3 accidentals' button. Below this is a musical score for 'Non per la' by Johannes Martini, featuring staves for Altus, Tenor, and Bassus. The 'Vocal Ranges' section shows a graph of note counts for Altus, Tenor, and Bassus, with a 'Show by duration' button. The 'Reference Edition' section lists the edition: 'Johannes Martini (Recent Researches in the Music of the Middle Ages and Early Renaissance, ed. Murray Steib, Elaine Moohan, and Edward G. Evans, Jr.)'. The 'Downloads' section lists various file formats: PDF score, PDF w/ ed. accidentals, MIDI, Humdrum (on Github), MuseData, NoteArray, JSON Piano Roll, MusicXML, MEI, and MP3.

<http://josquin.stanford.edu/work/?id=Mar3021>

Download score in various data formats

Non per la

PDF created with MuseData:

The musical score for 'Non per la' by Johannes Martini is displayed. It features three staves: Altus (soprano), Tenor, and Bassus. The score is in G minor (three flats) and common time (C). The Altus part begins with a whole rest, followed by a half note G, a quarter note A, and a half note B. The Tenor part begins with a whole rest, followed by a half note G, a quarter note A, and a half note B. The Bassus part begins with a whole note G, followed by a half note A, a quarter note B, and a half note C. The score is labeled 'Johannes Martini' in the top right corner.

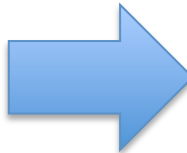
Humdrum to MuseData

<http://josquin.stanford.edu/data?a=humdrum&f=Mar3021>

```

!!!COM:      Martini, Johannes
!!!CDT:      ~1440///-~1497//
!!!OTL:      Non per la
!!!AGN:      Song; Chanson
!!!SCT:      Mar3021
!!!SCA:      Mar3021
!!!voices:   3
**kern      **kern      **kern
*staff3     *staff2     *staff1
*Ivox       *Ivox       *Ivox
*I"Bassus   *I"Tenor    *I"Altus
*I'B        *I'T        *I'A
*clefF4     *clefGv2    *clefG2
*k[b-e-]    *k[b-e-]    *k[b-e-]
*M2/1       *M2/1       *M2/1
*met(C|)    *met(C|)    *met(C|)
=1-         =1-         =1-
1BB-        1r         0r
2D\         1B-        .
2E-\        .          .
=2          =2         =2
2.F\        2.A/       0r
4G\         4B-\       .
2A\         2c\        .
[2G\        [2B-\      .
=3          =3         =3
    
```

muse2ps
options



<http://josquin.stanford.edu/data?a=musedata&f=Mar3021>

```

@muse2psv1==jc90FW1w2250l2770m100
@muse2psv1==T^Non per la^
@muse2psv1==s^[(.)(.)(.)]^
@muse2psv1==C^Johannes Martini^i2l150v85,85,150Q16
Header Record 1: optional copyright notice
Header Record 2: optional file identification
TIMESTAMP: FEB/22/2017
03/02/2015 Chris Gage 11-06-2014
WK#:1 MV#:1
Header Record 6: source
Non per la
Header Record 8: movement title
Altus
Header Record 10
Group memberships: score
score: part 1 of 3
$ K:-2 Q:1 T:61/0 C:4
rest 8 1
measure 2
rest 8 1
measure 3
rest 8 1
measure 4
rest 4 1 w
Bf4 4 1 w
measure 5
    
```

CS 229 Machine Learning

- *Attribution of Musical Works to Josquin des Prez*. Phillip Lee, Kate Stuckman, Zachary Sunberg
<http://cs229.stanford.edu/proj2013/SunbergStuckmanLee-AttributionOfMusicalWorksToJosquinDesPrez.pdf>
- *Composer Style Attribution*. Jacqueline Speiser, Vishesh Gupta.
<http://cs229.stanford.edu/proj2013/CS229-FinalProject.pdf>
- *Composer Style Attribution*. Kevin Laube, Naroa Zurutuza.
<http://cs229.stanford.edu/proj2013/LaubeZurutuza-ComposerStyleAttribution.pdf>
- *Reveal Hidden Information in Music Scores: Composer Attribution*. Fang-Chieh Chou, Yi-Hong Kuo, Hsiang-Yu Yang.
<http://cs229.stanford.edu/proj2013/ChouKuoYang-RevealHiddenInformationInTheMusicScoresComposerAttribution.pdf>
- *Application of Classification Algorithms to Renaissance Music Attribution*. Alex Adamson.
<http://cs229.stanford.edu/proj2013/Adamson-JosquinMusicAttributionProject.pdf>


Tasso in Music Project

<http://www.tassomusic.org>

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Tasso in Music Project

Digital Edition of the Settings of Torquato Tasso's Poetry, c. 1570-1640



Rime

Gerusalemme

Aminta

Other

Solerti #	Title (poetic genre)
3	Su l'ampia fronte il cresco oro lucente (sonetto)
23	Io non posso gioire (madrigale)
24	Già non son io contento (madrigale)
25	Come vivrò ne le mie pene, Amore (madrigale)
26	Se 'l mio core è con voi come desia (madrigale)
28	Giacea la mia virtù vinta e smarrita (sonetto)
33	Io veggio in cielo scintillar le stelle (sonetto)
38	Stavasi Amor quasi in regno assiso (sonetto)
46	Amore se fia giammai che dolce il tocchi (sonetto)
47	Non è questa la mano (madrigale/ballata)

Username: tasso

Password: ossat

MuseData generated scores

<http://www.tassomusic.org/data?&a=notation&f=Trm0242a>

Sovra l'herbette e i fiori (i.e., Sovra l'erbette e i fiori, *Rime* 242)

Giulio Zenaro, *Il primo libro de madrigali a tre voci* (Venice: Vincenzi, 1589)

Canto

So - vra l'her-bet-te e i fio - - - - ri, e i fio - -

Tenore

So - - vra l'her - bet-te e i fio - - -

Basso

8

C

- - - ri La mia ____ cru - del ____

T

- - - ri Fu - già tut - to sma - ri - to La mia cru - del ____

B

La mia ____ cru - del Li -

8

muse2scr

Convert MuseData into SCORE PMX data

Similar to muse2ps

The image displays a musical score for a symphony, divided into two sections: **Adagio** and **Allegro molto e vivace.**

Adagio Section:

- Flauti 1, 2**: Treble clef, 2/4 time, *ff* dynamic.
- Oboi 1, 2**: Treble clef, 2/4 time, *ff* dynamic.
- Clarineti 1, 2 in C**: Treble clef, 2/4 time, *ff* dynamic.
- Fagotti 1, 2**: Bass clef, 2/4 time, *ff* dynamic.
- Corni 1, 2 in C**: Treble clef, 2/4 time, *ff* dynamic.
- Trombe 1, 2 in C**: Treble clef, 2/4 time, *ff* dynamic.
- Timpani in C, G**: Bass clef, 2/4 time, *ff* dynamic.
- Violino I**: Treble clef, 2/4 time, *ff* dynamic, with a *p* (piano) marking and a *pp* (pianissimo) marking.
- Violino II**: Treble clef, 2/4 time, *ff* dynamic.
- Viola**: Alto clef, 2/4 time, *ff* dynamic.
- Violoncello e Contrabasso**: Bass clef, 2/4 time, *ff* dynamic.

Allegro molto e vivace Section:

- Fag 1-2**: Bass clef, 2/4 time, *p* (piano) dynamic.
- Vln 1**: Treble clef, 2/4 time, *p* dynamic.
- Vln 2**: Treble clef, 2/4 time, *p* dynamic.
- Vla**: Alto clef, 2/4 time, *p* dynamic.
- Vc+Cb**: Bass clef, 2/4 time, *p* dynamic.

The score is written for a symphony orchestra, with the tempo changing from **Adagio** to **Allegro molto e vivace.** The key signature is one flat (B-flat major or F minor). The time signature is 2/4.

MuseData to SCORE (PMX)

(C) 1997, 2002, 2005 Center for Computer Assisted Research in the Humanities.
 ID: {beethoven/bhl/orch/sym1/stage2/04/01}
 TIMESTAMP: MAY/19/2010 [md5sum:1b1733fa57e6899e3e203c9240d61c67]
 02/13/97 Fran Bennion
 WK#:21 MV#:4
 Breitkopf & H\3rtel, Leipzig, Series 1 No. 1
 Beethoven Symphony No. 1 in C Major, Op. 21
 Fourth Movement
 Flauto 1
 0 0
 Group memberships: sound
 sound: part 1 of 18
 \$ K:0 Q:4 T:2/4 C:4 D:Adagio
 G6 6 q. d Fff
 P C34:Y60
 rest 2 e
 measure 2
 rest 8
 measure 3
 rest 8
 measure 4
 rest 8
 measure 5
 rest 8
 measure 6
 \$ D:Allegro molto e vivace.
 rest 4 q F
 rest 4 q
 measure 7
 rest 8
 mheavy3 8 |:
 rest 8
 measure 9
 rest 8
 measure 10
 rest 8
 measure 11

99. 1.0 SCORE (tm) San Andreas Press .pmx file. created: 05/15/12 by muse2sc program
 99. 1.0 Data converted from the MUSEDATA format. Source data compiled by
 99. 1.0 the Center for Computer Assisted Research in the Humanities,
 99. 1.0 located at Stanford University. (<http://www.ccarh.org>)
 99. 1.0 Composer: L. Beethoven Source: Breitkopf & H\3rtel, Leipzig, Series 1 No. 1
 99. 1.0 Work: Beethoven Symphony No. 1 in C Major, Op. 21 Mvmt: Fourth Movement
 99. 1.0 Page: 1 (c) Copyright 2007 by CCARH
 t 1.0 2.366 5.00 1.00 1.20
 _00Vc+Cb
 8. 1.0 15.000 0.00 0.52 200.00 0.0000 0.00 1112.5010
 14. 1.0 15.000 5.00
 14. 1.0 15.000 4.00 9.00
 3. 1.0 15.452 0.00 1.00
 14. 1.0 21.679 1.00 4.00
 1. 1.0 27.815 6.00 10.00 0.00 1.0000 0.00 0.00
 9. 1.0 27.815 -0.28 53.00 1.10
 2. 1.0 38.283 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 49.113 1.00
 1. 1.0 51.008 6.00 10.00 0.00 1.0000 0.00 0.00
 2. 1.0 61.476 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 72.305 1.00
 1. 1.0 74.200 6.00 10.00 0.00 1.0000 0.00 0.00
 2. 1.0 84.669 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 95.498 1.00
 1. 1.0 97.393 6.00 10.00 0.00 1.0000 0.00 0.00
 1. 1.0 107.861 6.00 10.00 0.00 1.0000 0.00 0.00
 14. 1.0 118.691 1.00
 1. 1.0 120.586 6.00 10.00 0.00 1.0000 0.00 0.00
 2. 1.0 131.054 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 141.883 1.00
 1. 1.0 144.320 7.00 20.00 0.00 1.0000 0.14 0.00
 2. 1.0 154.788 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 166.971 1.00
 1. 1.0 168.866 10.00 20.00 0.00 1.0000 0.14 0.00
 2. 1.0 173.920 0.00 0.00 0.00 1.0000 0.00 0.00
 14. 1.0 182.132 1.00
 t 1.0 183.215 13.5 1.00 1.20
 _01Vc.

Command-line SCORE to SVG

```
#!/usr/bin/perl
use HTTP::Request::Common;
use LWP::UserAgent;
my $data;
my $line;
while ($line = <>) {
    $data .= "$line";
}
$ua = LWP::UserAgent->new;
my $response = $ua->request(
    POST 'http://score.sapp.org/cgi-bin/score',
    [   outputformat => 'svg',
        embedpmx     => 'yes',
        inputdata    => [$data] ]);
if ($response->is_success) {
    print $response->decoded_content;
} else {
    die $response->status_line;
}
```

Save to a file such as
[score2svg](#) and then

Run:

[chmod 0755 score2svg](#)

[score2svg file.txt > file.svg](#)

Command-line SCORE to EPS

```
#!/usr/bin/perl
use HTTP::Request::Common;
use LWP::UserAgent;
my $data;
my $line;
while ($line = <>) {
    $data .= "$line";
}
$ua = LWP::UserAgent->new;
my $response = $ua->request(
    POST 'http://score.sapp.org/cgi-bin/score',
    [   outputformat => 'eps',
        embedpmx     => 'yes',
        inputdata    => [$data] ]);
if ($response->is_success) {
    print $response->decoded_content;
} else {
    die $response->status_line;
}
```

Save to a file such as
[score2eps](#) and then

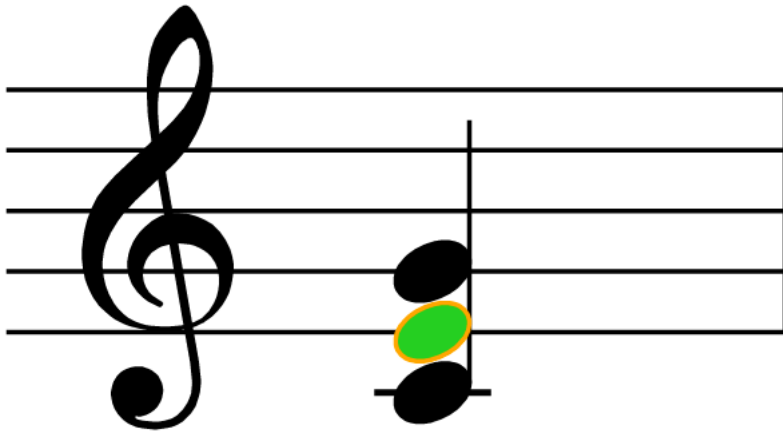
Run:

[chmod 0755 score2svg](#)

[score2svg file.txt > file.eps](#)

SVG Code embedding in SCORE

<http://score.sapp.org/example/8001/01>



```
#SVG_SCALE: 3
sta 1 0 0 30
treb 1 3
1 1 15 1 10 0 1 2
t 1 1
_99%svg%<g color="limegreen" stroke="orange">
1 1 15 3 0 0 1
t 1 1
_99%svg%<\g>
1 1 15 5 0 0 1
bar 1 30
```

Wikipedia incipits

[https://en.wikipedia.org/wiki/Piano_Sonata_No._14_\(Beethoven\)](https://en.wikipedia.org/wiki/Piano_Sonata_No._14_(Beethoven))

Adagio sostenuto

Si deve suonare tutto questo pezzo delicatissimamente e senza sordini



Back

Forward

Reload

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Add to Bookmarks

Enter Full Screen

Copy Address

Save As...

Print...

Cast...

AdBlock

View Page Source

Inspect Element



```
1874 M29571 -21335
1875 L29571 -20456
1876 "/>
1877 </g>
1878 </svg>
1879 <?SCORE version="4"
1880 #SVG-SCALE: 1.2
1881 8 1 0.000 0.0 0.75 200.000
1882 14 1 0.000 2.0 8.00
1883 14 1 0.000 2.0
1884 3 1 1.235 0.0 1.00
1885 17 1 6.595 0.0 4.00 1.000
1886 18 1 15.630 0.0 98.00 1.000
1887 1 1 20.990 -1.0 10.00 2.000 4.0000 7.00
1888 1 1 20.990 6.0 0.00 2.000 4.0000
1889 14 1 64.085 2.0
1890 1 1 65.695 -2.0 10.00 2.000 4.0000 7.00
1891 1 1 65.695 5.0 0.00 2.000 4.0000
1892 14 1 108.790 2.0
1893 1 1 110.400 -3.0 10.00 1.000 2.0000 7.00
1894 1 1 110.400 4.0 0.00 1.000 2.0000
1895 1 1 131.010 -5.0 10.00 1.000 2.0000 7.00
1896 1 1 131.010 2.0 0.00 1.000 2.0000
1897 14 1 152.820 2.0
```